CONGRESSIONAL BUDGET OFFICE
COST ESTIMATE

February 12, 2008

H.R. 6
Energy Independence and Security Act of 2007

As cleared by the Congress on December 18, 2007,
and signed by the President on December 19, 2007

SUMMARY

H.R. 6 (enacted as Public Law 110-140) modifies numerous federal energy policies, programs, and tax measures. CBO and the Joint Committee on Taxation (JCT) estimate that the legislation will:

- Increase direct spending by $582 million over the 2008-2012 period and reduce it by $85 million over the 2008-2017 period;
- Increase revenues by $976 million over the 2008-2012 period and reduce them by $33 million over the 2008-2017 period; and
- Reduce future deficits (or increase future surpluses) by $394 million over the 2008-2012 period and by $52 million over the 2008-2017 period.

ESTIMATED COST TO THE FEDERAL GOVERNMENT

The estimated impact of H.R. 6 on direct spending and revenues is shown in the following table. Direct spending effects fall primarily within budget functions 270 (energy), 350 (agriculture), and 400 (transportation). (In addition, implementing a wide array of new programs and activities authorized by H.R. 6 would increase discretionary spending, assuming appropriation of the necessary amounts. Those effects are not included in this estimate.)

DIRECT SPENDING AND REVENUE EFFECTS OF H.R. 6, THE ENERGY INDEPENDENCE AND SECURITY ACT OF 2007 (PUBLIC LAW 110-140)

	By Fiscal Year, in Millions of Dollars											
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2008-2012	2008-2017
CHANGES IN DIRECT SPENDING												
Title II - Energy Security Through Increased Production of Biofuels												
Renewable Fuels Requirement and Agricultural Support Programs												
Estimated Budget Authority	0	-9	-18	-20	-22	-49	-127	-199	-332	-392	-69	-1,168
Estimated Outlays	0	-9	-18	-20	-22	-49	-127	-199	-332	-392	-69	-1,168
Increased Funding for Highway Programs												
Estimated Budget Authority	3	21	18	0	0	0	0	0	0	0	42	42
Estimated Outlays	0	0	0	0	0	0	0	0	0	0	0	0
Title IV - Energy Savings in Buildings and Industry												
Estimated Budget Authority	33	37	133	141	152	55	-48	-49	-51	30	496	433
Estimated Outlays	33	37	133	141	152	55	-48	-49	-51	30	496	433
Title V - Energy Savings in Government and Public Institutions												
Estimated Budget Authority	30	32	33	33	34	35	36	37	38	400	162	708
Estimated Outlays	31	46	36	8	34	35	35	37	38	350	155	650
Total Direct Spending Changes												
Estimated Budget Authority	66	81	166	154	164	41	-139	-211	-345	38	631	15
Estimated Outlays	64	74	151	129	164	41	-140	-211	-345	-12	582	-85
CHANGES IN REVENUES												
Title I - Energy Security Through Improved Vehicle Fuel Economy												
Estimated Revenues	0	0	0	-16	-52	-122	-226	-366	-550	-782	-68	-2,114
Title II - Energy Security Through Increased Production of Biofuels												
Estimated Revenues	-27	-148	-355	-44	107	143	179	214	228	235	-467	532
Title XV- Revenue Provisions												
Estimated Revenues	1,043	412	13	19	24	22	12	3	1	1	1,511	1,549
Total Changes in Revenues	1,016	264	-342	-41	79	43	-35	-149	-321	-546	976	-33
TOTAL CHANGES												
Change in the Deficit or Surplus [a]	-952	-190	493	170	85	-2	-105	-62	-24	534	-394	-52

Sources: Congressional Budget Office and Joint Committee on Taxation.

Note: Components may not sum to totals because of rounding.

a. Negative numbers indicate a reduction in the deficit (or an increase in the surplus); positive numbers indicate the opposite.

BASIS OF ESTIMATE

The following sections describe provisions of H.R. 6 that significantly affect direct spending and revenues.

Direct Spending

CBO estimates that H.R. 6 will increase direct spending by $582 million over the 2008-2012 period and reduce it by $85 million over the 2008-2017 period. Those effects result primarily from provisions that increase mandates related to the use of renewable motor fuels, require federal agencies to meet new goals related to the efficiency of energy and water use, extend and expand federal agencies' authority to enter into energy savings performance contracts (ESPCs), and direct the General Services Administration (GSA) to install a photovoltaic system at a federal facility in Washington, D.C.

Title II - Energy Security Through Increased Production of Biofuels. Title II requires that refiners, blenders, distributors, and importers of motor fuels include greater amounts of renewable fuels in motor fuels sold in the United States. Such requirements will affect direct spending to the extent that they affect the market price or production of agricultural commodities, such as corn and soybeans, that are eligible for federal price supports. CBO estimates that implementing the renewable fuel requirements in H.R. 6 will reduce direct spending for crop programs by $69 million over the 2008-2012 period and nearly $1.2 billion over the 2008-2017 period. (The renewable fuels provision also will affect revenues that will subsequently increase funding for federal highway programs.)

Changes in Spending for Agricultural Support Programs. Prior to enactment of H.R. 6, suppliers were required to purchase 5.4 billion gallons of renewable motor fuels in 2008, escalating to 7.5 billion gallons by 2012. H.R. 6 raises those targets to 9 billion gallons in 2008, increasing to 36 billion gallons by 2022. (The legislation requires 24 billion gallons of renewable fuel use in 2017, the last year covered by this estimate.) The legislation requires that growing portions of those amounts be derived from advanced biofuels, which are defined as ethanol derived from cellulosic biomass (including crop residue, waste material, etc.), as well as diesel-equivalent fuel, biogas, and butanol or higher alcohols produced from renewable biomass. The Administrator of the Environmental Protection Agency can modify or waive those requirements under certain circumstances, particularly if he or she determines that compliance will pose certain hardships or supplies are insufficient due to extreme or unusual circumstances.

CBO estimates that implementing H.R. 6 will increase production of conventional ethanol (defined in the legislation as ethanol derived from corn starch) relative to the amounts expected prior to enactment of the legislation. Because corn-based ethanol can be produced at prices competitive under today's market and tax conditions, CBO anticipates that producers will increase capacity sufficient to meet the legislation's goal of 15 billion gallons a year for 2015 and beyond. CBO expects that corn prices will rise significantly over the 2008-2017 period in response to the demand resulting from that increase in ethanol production.

CBO estimates that implementing H.R. 6 will also increase production of biodiesel fuel. The legislation establishes a goal of 180 million gallons of biodiesel in 2008, increasing to one billion gallons by 2012. Biodiesel fuel could be made from domestically produced or imported vegetable oil. CBO anticipates that biodiesel producers will increase production of biodiesel using both domestically produced soybean oil and some imported vegetable oils (such as palm oil). CBO expects that, as with corn, soybean prices will also increase significantly over the 2008-2017 period in response to the increased demand resulting from the act's fuel requirements.

Accordingly, we estimate that the costs of federal programs to support farm prices and provide income support to agricultural producers will fall over the 2008-2017 period. CBO estimates that spending for farm price and income supports will decline by $69 million over the 2008-2012 period and nearly $1.2 billion over the 2008-2017 period.

Increased Funding for Highway Programs. CBO estimates that enacting the legislation's renewable fuels requirements will increase certain revenues that are credited to the Highway Trust Fund (see "Revenues"). As a result, CBO estimates that H.R. 6 will increase contract authority (a mandatory form of budget authority) known as Revenue-Aligned Budget Authority (RABA). By law, the total amount of contract authority available to the Federal-Aid Highways program is adjusted to reflect receipts to the highway account of the Highway Trust Fund as compared to levels set in the current authorization law for highway programs (Public Law 109-59), which expires in 2009.

CBO estimates that H.R. 6 will increase receipts to the Highway Trust Fund by about $7 million in 2008 and $35 million in 2009, thereby increasing contract authority by an estimated $42 million over the 2008-2010 period. (RABA provisions spread any adjustment to revenues evenly over a period of two years.)

Under current law, most spending from contract authority provided for the Federal-Aid Highways program is considered discretionary because it is controlled by annual limitations on obligations set in appropriation acts. Therefore, subsequent outlays of additional RABA resulting from the legislation's renewable fuels requirements would be subject to future appropriation acts and are not included in this estimate.

Title IV - Energy Savings in Buildings and Industry. Title IV makes several changes related to the use of energy and water at federal and nonfederal facilities. The legislation requires federal agencies to perform comprehensive evaluations of energy and water use at certain federal facilities and identify cost-effective measures to increase the efficiency with which they are used. The legislation authorizes agencies to finance the implementation of such measures using energy savings performance contracts. CBO estimates that title IV will increase direct spending by $496 million over the 2008-2012 period and a net amount of $433 million over the 2008-2017 period.

Budgetary Treatment of ESPCs. ESPCs enable federal agencies to enter into long-term contracts with an energy savings company (ESCO), for the acquisition of energy-efficient equipment, such as new windows, lighting, and heating, ventilation, and air conditioning systems. Using such equipment can reduce the energy costs for a facility. The statute authorizing ESPCs allows the government to pay for the equipment over time on the basis of the estimated reduction in annual payments to utilities. Once the equipment is paid for, savings may accrue to the government if the useful life of the equipment exceeds the payback period. Those savings would be reflected in the budget at the time they are realized if future appropriations are reduced accordingly.

Because the government does not pay for the equipment at the time it is acquired, the ESCO borrows money from a nonfederal lender to finance the acquisition and installation of the equipment. When it signs the ESPC, the government commits to paying for the full cost of the equipment, as well as the interest costs on the ESCO's borrowing for the project. Since the ESCO faces higher borrowing costs than the U.S. Treasury, total interest payments for the equipment acquisition will be higher than if the government financed the acquisition directly with appropriated funds.

The obligation to make payments for the equipment and the financing costs is incurred when the government enters into the ESPC. Agencies can use ESPCs to acquire new equipment, paying over a period of up to 25 years, without an appropriation for the full amount of the purchase price. Thus, consistent with governmentwide accounting principles, the budget should reflect that commitment as new obligations at the time that an ESPC is signed, and the authority to enter into such a contract without appropriation for the full amount of the purchase price constitutes direct spending, in CBO's judgment.

Estimated Costs of Energy and Water Efficiency Measures. CBO estimates that, under H.R. 6, federal agencies will use ESPCs to both increase overall levels of investment in energy and water efficiency measures and accelerate planned investments, thereby increasing direct spending relative to baseline levels in early years and reducing it in later years. Based on information from the Department of Energy (DOE) on agencies' current use of ESPCs and the costs of typical projects, CBO estimates that increased direct spending for energy and water

efficiency measures will total $496 million over the 2008-2012 period and a net amount of $433 million over the 2008-2017 period.

Title V - Energy Savings in Government and Public Institutions. Title V further extends and expands federal agencies' authority to use ESPCs. It also requires GSA to install a photovoltaic system at a DOE facility in Washington, D.C. CBO estimates that this title will increase direct spending by $155 million over the 2008-2012 period and $650 million over the 2008-2017 period.

Energy Savings Performance Contracts. Title V permanently extends agencies' authority to use ESPCs; prior to enactment of Public Law 110-140, that authority had been scheduled to be expire at the end of fiscal year 2016. The legislation also makes several changes to the definition of energy savings under that authority, particularly to include the increase in the efficiency of existing energy sources that can be achieved by installing cogeneration or heat recovery systems. (Cogeneration is the use of a fuel or power source to simultaneously generate electricity and useful heat.) Those changes will allow federal agencies to continue using ESPCs in 2017 and thereafter and will authorize the use of ESPCs to acquire cogeneration equipment.

According to DOE, federal agencies currently use such contracts to acquire approximately $300 million in energy-conserving equipment and improvements each year. Additional spending through ESPCs as a result of expanding the definition of energy savings to include cogeneration could vary widely from year to year, depending on the magnitude of investments. Federal agencies have acquired cogeneration equipment costing from several million dollars to over $100 million. CBO estimates that agencies will increase their use of ESPCs by an average of $30 million a year over the 2008-2016 period, particularly to acquire cogeneration equipment. That annual funding could finance the acquisition of several small cogeneration systems of about 5 megawatts each or one medium-sized system of about 15 megawatts. A large cogeneration system of greater than 30 megawatts could cost $100 million.

By permanently extending the authority for ESPCs, the act will allow federal agencies to continue to enter into ESPCs in 2017 and thereafter. In total, CBO estimates that the ESPC expansion in title V will increase direct spending by $650 million over the 2008-2017 period. (Those amounts do not include increased costs from using ESPCs to comply with new goals and requirements related to energy and water efficiency, which are discussed in the preceeding section. Also, some of the direct spending costs could be offset by reduced appropriations in future years.)

Other Provisions in Title V: Photovoltaic System. H.R. 6 requires GSA to install a photovoltaic system at a DOE facility in Washington, D.C. Photovoltaic systems use solar-power technology to convert energy from the sun into electricity. The legislation directs GSA to use up to $30 million in unobligated balances in the Federal Buildings Fund, which currently has over $2 billion available, beginning in fiscal year 2008, to install the system.

CBO estimates that H.R. 6 will modify the rate of spending of balances in the Federal Buildings Fund but will not increase budget authority. Based on information from DOE about the anticipated construction schedule, CBO estimates that this project will cost $6 million in 2008 and $30 million over the 2008-2012 period. However, we also estimate that this project will not affect net federal outlays over the 2008-2012 period because spending on this project will be offset by decreased spending on other projects or activities later in that period.

Revenues

JCT and CBO estimate that H.R. 6 will increase revenues by $976 million over the 2008-2012 period and reduce them by $33 million over the 2008-2017 period. Those amounts include the effects of provisions that raise fuel economy standards for certain vehicles, increase mandates related to the use of renewable motor fuels, and modify taxes related to unemployment insurance and to the amortization of specific expenditures by oil companies.

Title I - Energy Security Through Improved Vehicle Fuel Economy. H.R. 6 will increase fuel economy standards for passenger automobiles and light trucks starting in 2011. CBO expects that those changes will lead to reduced use of motor fuels, which in turn will reduce revenue from excise taxes levied on those fuels. Under current law, gasoline is taxed by the federal government at a rate of 18.4 cents per gallon.

Since the late 1970s, the Secretary of Transportation has been authorized to set corporate average fuel economy (CAFE) standards for passenger automobiles and light trucks sold in the United States. Automobile manufacturers must achieve the established level on average for their fleets or face penalties. The standard for passenger automobiles has been 27.5 miles per gallon since 1985. In 2006, the Secretary of Transportation established a new set of standards for light trucks that, for the first time, vary based on different vehicle attributes. The new standards for light trucks are being phased in; by 2010, those standards will reach 23.5 miles per gallon on average.

H.R. 6 requires the Secretary of Transportation to increase the CAFE standards for passenger automobiles and light trucks starting in 2011 so that the standards for the combined fleet reach at least 35 miles per gallon by 2020. Separate CAFE standards for passenger automobiles and light trucks will continue. H.R. 6 also authorizes the Secretary of Transportation to establish standards for passenger automobiles that vary by vehicle attributes. The act also allows the Secretary to establish a system of trading credits between firms; those firms that earn credits by producing a fleet with fuel economy that exceeds the standards would be allowed to sell those credits to firms with a fleet below the standards. H.R. 6 also establishes a process to study the fuel economy of medium- and heavy-duty commercial trucks and to potentially extend CAFE standards to those vehicles after a number of years.

As a result of the increase in CAFE standards for passenger automobiles and light trucks, CBO expects savings in motor fuel use by 2017 of over 5 billion gallons—or between 2 percent and 3 percent of total motor fuel use expected in that year without the change in law. As a result, CBO expects revenues from excise taxes on motor fuels to decline by a little over $2 billion over the 2011-2017 period, net of income and payroll tax effects. CBO also expects that establishing a credit-trading program will slightly reduce penalties collected for violations of the CAFE standards. It is uncertain how much trading will take place given the limited number of automakers.

CBO estimates that the revenue losses will rise rapidly between 2011 and 2017 for several reasons. First, the CAFE standards will increase over the period. Second, the vehicle fleet is replaced over a period of years as individuals gradually replace old vehicles with new ones. Over time, an increasing share of the vehicle stock will be produced under the new standards, and motor fuel savings will accumulate. Third, some firms will not find the higher standards to be binding immediately because their fleets already exceed the higher standards. Because of recent price increases for motor fuels, other firms—that until recently produced vehicles with fuel economy at or just above the standards—are expected to produce vehicles with higher fuel economy. As the standards rise under H.R. 6, however, they are likely to affect an increasing share of manufacturers.

Title II - Energy Security Through Increased Production of Biofuels. Changes in revenues under title II stem from provisions that require refiners, blenders, distributors, or importers to increase their use of renewable fuels. Mandating the use of renewable fuel affects federal revenues in two ways. First, tax law provides a credit of 51 cents per gallon—payable from the Treasury's general fund to manufacturers of alcohol fuels, which include some renewable fuels such as ethanol. That credit is scheduled to expire at the end of calendar year 2010. The second effect arises because ethanol produces less energy per gallon than gasoline does: substituting ethanol for gasoline increases the total amount of fuel used, and thus increases revenue from the 18.4 cent per gallon excise tax on gasoline and gasoline-ethanol blends. This

second effect partially offsets the loss in government revenue while the ethanol credit is in effect and increases revenue after the credit expires.

For a given number of miles driven, an additional gallon of ethanol can replace only two-thirds of a gallon of gasoline. This is because ethanol produces roughly one-third less energy when burned than an equal volume of gasoline. Therefore, to drive a motor vehicle the distance made possible by the energy in a gallon of gasoline, one would need to use the equivalent of one gallon of ethanol *and* one-third of a gallon of gasoline. This results in a one-third of a gallon increase in total fuel use, which increases revenues by about 6 cents for every gallon of ethanol added to the fuel supply. The current manufacturers' credit more than offsets that gain, however, leading to a net loss of about 45 cents for every gallon of ethanol added to the fuel supply while that credit remains in effect. A similar but smaller effect occurs for biodiesel, which has about 90 percent of the energy content of regular diesel fuel.

CBO estimates that title II will reduce revenues over fiscal years 2008 through 2011 by $574 million, when the tax credit is in effect. That amount is net of increases in income and payroll taxes. Under current law, the ethanol tax credit will not be in effect during fiscal years 2012 through 2017, and CBO estimates that net revenues will increase by $1.1 billion as a result of additions to the volume of motor fuel consumed. In total, over the 2008-2012 period, revenues will decline by an estimated $467 million; over the 2008-2017 period, revenues will increase by about $532 million, net of changes to income and payroll taxes. (That effect from additions to motor fuel volume would change to a loss of receipts if the current ethanol credit of 51 cents a gallon were extended, instead of being allowed to expire as scheduled.)

The above estimates assume that, relative to current law, implementing H.R. 6 will increase the use of conventional ethanol by about 500 million gallons in fiscal year 2009, 1.1 billion gallons in 2010, 1.4 billion gallons in 2011, and by steadily growing amounts that will reach about 5 billion gallons before leveling off in 2016.

Although the act establishes goals for the use of cellulosic ethanol, CBO expects that those specific mandates will not have a significant effect on revenues through 2017. Based on information from financial analysts, CBO assumes that a renewable fuel standard will not, by itself, materially change the creditworthiness of private-sector investments in such production facilities. Instead, we expect that increased output of cellulosic ethanol will depend on breakthroughs resulting from future investments in research, development, and demonstration projects, which typically are funded by federal appropriations and venture capital firms. Assessments by DOE suggest that even with such research, cellulosic ethanol is unlikely to be produced in significant commercial quantities until some time after 2015. Thus, we anticipate that implementing this portion of the renewable fuel standard in H.R. 6 will not significantly increase the volume of such fuels sold through 2017.

Title XV - Revenue Provisions. H.R. 6 makes two changes to tax law that result in estimated increases in revenues. First, the Federal Unemployment Insurance Tax Act imposes on employers an effective tax of 0.8 percent on the first $7,000 paid annually to each employee. The 0.8 percent tax includes a surtax of 0.2 percent that was scheduled to expire on December 31, 2007. H.R. 6 extends the surtax to December 31, 2008, which CBO estimates will increase revenues by about $1.0 billion in 2008 and $0.4 billion in 2009.

H.R. 6 also lengthens the amortization period from five years to seven years for geological and geophysical expenditures of major integrated oil companies. Those expenditures are incurred for the purpose of obtaining information about the value of mineral properties. JCT estimates that lengthening the amortization period will increase revenues by $103 million over the 2008-2017 period.

PREVIOUS CBO ESTIMATES

CBO and JCT have completed several estimates of legislation with provisions that are substantively similar to provisions of H.R. 6 and that affect direct spending or revenues. In particular:

- Provisions to increase fuel economy standards are similar to S. 357, the Ten-in-Ten Fuel Economy Act, as ordered reported by the Senate Committee on Commerce, Science, and Transportation on May 8, 2007, for which CBO transmitted a cost estimate on June 4, 2007. CBO estimates that H.R. 6 will reduce the use of motor fuels, and in turn reduce revenue from excise taxes levied on those fuels, to a lesser extent than standards proposed under S. 357.

- Provisions to increase and expand requirements related to the use of renewable motor fuels are similar to title I of S. 1321, the Energy Savings Act of 2007, as ordered reported by Senate Committee on Energy and Natural Resources on May 7, 2007, for which CBO transmitted a cost estimate on June 11, 2007. Differences in our estimates of direct spending and revenues under H.R 6 reflect differences in the volumes of conventional and advanced biofuels we expect will be produced.

- Provisions to establish new federal goals related to the efficiency of energy and water and expand the scope of contracting tools are similar to provisions of S. 1321, the Energy Savings Act of 2007, as ordered reported by Senate Committee on Energy and Natural Resources on May 7, 2007, for which CBO transmitted a cost estimate on June 11, 2007. They also are similar to provisions of H.R. 3221, the Renewable Energy and Conservation Tax Act of 2007, as passed by the House of Representatives on August 4, 2007, for which CBO transmitted a cost estimate on November 9, 2007.

Our estimates of direct spending under those pieces of legislation are greater than under H.R. 6 largely because CBO estimates that they would result in higher levels of federal investment in energy-related technologies, particularly for renewable energy facilities.

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